

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, and a second end (b) a plurality of barbs projecting from the body each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising an underside base transverse to the longitudinal axis of the body, where said base ~~that~~ is arcuate and a barb cut angle  $\Theta$  ranging from about 140 degrees to about 175 degrees.

2. (Previously presented) The barbed suture according to claim 1, wherein the barb cut angle  $\Theta$  ranges from about 152 degrees to about 165 degrees.

3. (Previously presented) The barbed suture according to claim 2, wherein the barb cut angle  $\Theta$  ranges from about 152 degrees to about 163 degrees.

4. (Original) The barbed suture according to claim 1, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

5. (Original) The barbed suture according to claim 1, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

6. (Original) The barbed suture according to claim 5, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

7. (Original) The barbed suture according to claim 5, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

8. (Original) The barbed suture according to claim 7, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

9. (Original) The barbed suture according to claim 1, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

10. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising an underside base transverse to the longitudinal axis of the body, where said base ~~that~~ is arcuate and a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6.

11. (Previously presented) The barbed suture according to claim 10, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.3 to about 0.55.

12. (Previously presented) The barbed suture according to claim 11, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.4 to about 0.5.

13. (Original) The barbed suture according to claim 10, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

14. (Original) The barbed suture according to claim 10, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

15. (Original) The barbed suture according to claim 14, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

16. (Original) The barbed suture according to claim 14, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

17. (Original) The barbed suture according to claim 16, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

18. (Original) The barbed suture according to claim 10, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

19. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a

configuration comprising an underside base transverse to the longitudinal axis of the body,  
where said base ~~that~~ is arcuate and a barb cut length with a ratio of the barb cut length to the  
suture diameter ranging from about 0.2 to about 2.

20. (Original) The barbed suture according to claim 19, wherein the ratio of  
the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

21. (Original) The barbed suture according to claim 20, wherein the ratio of  
the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

22. (Original) The barbed suture according to claim 19, wherein the barbs are  
configured in at least two sets, each set having a barb size different from the barb size of the  
other set.

23. (Original) The barbed suture according to claim 19, wherein the suture is  
made from a material selected from the group consisting of a bio-absorbable material, a non-  
absorbable material, and combinations thereof.

24. (Original) The barbed suture according to claim 23, wherein the bio-  
absorbable material is selected from the group consisting of polydioxanone, polylactide,  
polyglycolide, polycaprolactone, and combinations thereof.

25. (Original) The barbed suture according to claim 23, wherein the non-  
absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a  
natural fiber, and combinations thereof.

26. (Original) The barbed suture according to claim 25, wherein the polymer  
is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane,  
polytetrafluoroethylene, polyether-ester, and combinations thereof.

27. (Original) The barbed suture according to claim 19, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

28. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising an underside base transverse to the longitudinal axis of the body, where said base ~~that~~ is arcuate and a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6.

29. (Previously presented) The barbed suture according to claim 28, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1 to about 3.5.

30. (Previously presented) The barbed suture according to claim 29, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.5 to about 2.5.

31. (Original) The barbed suture according to claim 28, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

32. (Original) The barbed suture according to claim 28, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

33. (Original) The barbed suture according to claim 32, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

34. (Original) The barbed suture according to claim 32, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

35. (Original) The barbed suture according to claim 34, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

36. (Original) The barbed suture according to claim 28, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

37. (Withdrawn and currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a corrugated barb underside and an arcuate underside base, where the underside base is transverse to the longitudinal axis of the body.

38. (Withdrawn) The barbed suture according to claim 37, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

39. (Withdrawn) The barbed suture according to claim 37, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

40. (Withdrawn) The barbed suture according to claim 39, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

41. (Withdrawn) The barbed suture according to claim 39, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

42. (Withdrawn) The barbed suture according to claim 41, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

43. (Withdrawn) The barbed suture according to claim 37, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, a random disposition, and combinations thereof.

44. (Withdrawn and currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising an underside having an arcuate base, where the underside base is transverse to the longitudinal axis of the body.

45. (Withdrawn) The barbed suture according to claim 44, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

46. (Withdrawn) The barbed suture according to claim 44, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

47. (Withdrawn) The barbed suture according to claim 46, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

48. (Withdrawn) The barbed suture according to claim 46, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

49. (Withdrawn) The barbed suture according to claim 48, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

50. (Withdrawn) The barbed suture according to claim 44, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

51. (Withdrawn and currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have



a configuration comprising an underside having an arcuate base and varying barb sizes, where the underside base is transverse to the longitudinal axis of the body.

52. (Withdrawn) The barbed suture according to claim 51, wherein the barbs are configured in at least two sets, each set having a barb size different from the barb size of the other set.

53. (Withdrawn) The barbed suture according to claim 51, wherein the suture is made from a material selected from the group consisting of a bio-absorbable material, a non-absorbable material, and combinations thereof.

54. (Withdrawn) The barbed suture according to claim 53, wherein the bio-absorbable material is selected from the group consisting of polydioxanone, polylactide, polyglycolide, polycaprolactone, and combinations thereof.

55. (Withdrawn) The barbed suture according to claim 53, wherein the non-absorbable material is selected from the group consisting of a polymer, a metal, a metal alloy, a natural fiber, and combinations thereof.

56. (Withdrawn) The barbed suture according to claim 55, wherein the polymer is selected from the group consisting of polyamide, polyester, polypropylene, polyurethane, polytetrafluoroethylene, polyether-ester, and combinations thereof.

57. (Withdrawn) The barbed suture according to claim 51, wherein the barbs have a disposition on the body selected from the group consisting of a staggered disposition, a twist cut multiple spiral disposition, an overlapping disposition, a random disposition, and combinations thereof.

58. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a longitudinal axis, a first end, a

second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut  $\Theta$  angle ranging from about  $140^\circ$  to about  $175^\circ$ , (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6 and (v) wherein the barb has a configuration comprising an underside having an arcuate base, where the underside base is transverse to the longitudinal axis of the body.

59. (Cancelled)

60. (Currently amended) A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb jut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and (v) a twist cut multiple spiral disposition with a spirality angle  $\alpha$  ranging from about  $5^\circ$  to about  $25^\circ$ , and wherein the barbs have a configuration comprising an underside having an arcuate base, where the underside base is transverse to the longitudinal axis of the body.

61.–62. (Cancelled)

63. (Withdrawn) The barbed suture according to claim 1, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

64. (Withdrawn) The barbed suture according to claim 2, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

65. (Withdrawn) The barbed suture according to claim 3, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

66. (Withdrawn) The barbed suture according to claim 10, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

67. (Withdrawn) The barbed suture according to claim 11, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

68. (Withdrawn) The barbed suture according to claim 12, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

69. (Withdrawn) The barbed suture according to claim 19, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

70. (Withdrawn) The barbed suture according to claim 20, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

71. (Withdrawn) The barbed suture according to claim 21, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

72. (Withdrawn) The barbed suture according to claim 28, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

73. (Withdrawn) The barbed suture according to claim 29, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

74. (Withdrawn) The barbed suture according to claim 30, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

75. (Withdrawn) The barbed suture according to claim 58, further comprising wherein the barbs have a configuration comprising a corrugated barb underside.

76. (Withdrawn) The barbed suture according to claim 1, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

77. (Withdrawn) The barbed suture according to claim 2, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

78. (Withdrawn) The barbed suture according to claim 3, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

79. (Withdrawn) The barbed suture according to claim 10, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

80. (Withdrawn) The barbed suture according to claim 11, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

81. (Withdrawn) The barbed suture according to claim 12, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

82. (Withdrawn) The barbed suture according to claim 19, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

83. (Withdrawn) The barbed suture according to claim 20, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

84. (Withdrawn) The barbed suture according to claim 21, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

85. (Withdrawn) The barbed suture according to claim 28, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

86. (Withdrawn) The barbed suture according to claim 29, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

87. (Withdrawn) The barbed suture according to claim 30, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

88. (Withdrawn) The barbed suture according to claim 58, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

89. (Withdrawn) The barbed suture according to claim 1, further comprising wherein the barbs have a configuration comprising varying barb sizes.

90. (Withdrawn) The barbed suture according to claim 2, further comprising wherein the barbs have a configuration comprising varying barb sizes.

91. (Withdrawn) The barbed suture according to claim 3, further comprising wherein the barbs have a configuration comprising varying barb sizes.

92. (Withdrawn) The barbed suture according to claim 10, further comprising wherein the barbs have a configuration comprising varying barb sizes.

93. (Withdrawn) The barbed suture according to claim 11, further comprising wherein the barbs have a configuration comprising varying barb sizes.

94. (Withdrawn) The barbed suture according to claim 12, further comprising wherein the barbs have a configuration comprising varying barb sizes.

95. (Withdrawn) The barbed suture according to claim 19, further comprising wherein the barbs have a configuration comprising varying barb sizes.

96. (Withdrawn) The barbed suture according to claim 20, further comprising wherein the barbs have a configuration comprising varying barb sizes.

97. (Withdrawn) The barbed suture according to claim 21, further comprising wherein the barbs have a configuration comprising varying barb sizes.

98. (Withdrawn) The barbed suture according to claim 28, further comprising wherein the barbs have a configuration comprising varying barb sizes.

99. (Withdrawn) The barbed suture according to claim 29, further comprising wherein the barbs have a configuration comprising varying barb sizes.

100. (Withdrawn) The barbed suture according to claim 30, further comprising wherein the barbs have a configuration comprising varying barb sizes.

101. (Withdrawn) The barbed suture according to claim 58, further comprising wherein the barbs have a configuration comprising an arcuate barb base.

102. (Previously presented) The barbed suture according to claim 1, wherein the elongated body has a circular cross section.

103. (Previously presented) The barbed suture according to claim 2, wherein the elongated body has a circular cross section.

104. (Previously presented) The barbed suture according to claim 3, wherein the elongated body has a circular cross section.

105. (Previously presented) The barbed suture according to claim 10, wherein the elongated body has a circular cross section.

106. (Previously presented) The barbed suture according to claim 11, wherein the elongated body has a circular cross section.

107. (Previously presented) The barbed suture according to claim 12, wherein the elongated body has a circular cross section.

108. (Previously presented) The barbed suture according to claim 19, wherein the elongated body has a circular cross section.

109. (Previously presented) The barbed suture according to claim 20, wherein the elongated body has a circular cross section.

110. (Previously presented) The barbed suture according to claim 21, wherein the elongated body has a circular cross section.

111. (Previously presented) The barbed suture according to claim 28, wherein the elongated body has a circular cross section.

112. (Previously presented) The barbed suture according to claim 29, wherein the elongated body has a circular cross section.

113. (Previously presented) The barbed suture according to claim 30, wherein the elongated body has a circular cross section.

114. (Previously presented) The barbed suture according to claim 58, wherein the elongated body has a circular cross section.

115. (Previously presented) The barbed suture according to claim 1, wherein the elongated body has a non-circular cross section.

116. (Previously presented) The barbed suture according to claim 2, wherein the elongated body has a non-circular cross section.

117. (Previously presented) The barbed suture according to claim 3, wherein the elongated body has a non-circular cross section.

118. (Previously presented) The barbed suture according to claim 10, wherein the elongated body has a non-circular cross section.

119. (Previously presented) The barbed suture according to claim 11, wherein the elongated body has a non-circular cross section.

120. (Previously presented) The barbed suture according to claim 12, wherein the elongated body has a non-circular cross section.

121. (Previously presented) The barbed suture according to claim 19, wherein the elongated body has a non-circular cross section.

122. (Previously presented) The barbed suture according to claim 20, wherein the elongated body has a non-circular cross section.

123. (Previously presented) The barbed suture according to claim 21, wherein the elongated body has a non-circular cross section.



124. (Previously presented) The barbed suture according to claim 28, wherein the elongated body has a non-circular cross section.

125. (Previously presented) The barbed suture according to claim 29, wherein the elongated body has a non-circular cross section.

126. (Previously presented) The barbed suture according to claim 30, wherein the elongated body has a non-circular cross section.

127. (Previously presented) The barbed suture according to claim 58, wherein the elongated body has a non-circular cross section.

128. (Previously presented) The barbed suture according to claim 115, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

129. (Previously presented) The barbed suture according to claim 116, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

130. (Previously presented) The barbed suture according to claim 117, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

131. (Previously presented) The barbed suture according to claim 118, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle,

square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

132. (Previously presented) The barbed suture according to claim 119, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

133. (Previously presented) The barbed suture according to claim 120, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

134. (Previously presented) The barbed suture according to claim 121, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

135. (Previously presented) The barbed suture according to claim 122, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

136. (Previously presented) The barbed suture according to claim 123, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

137. (Previously presented) The barbed suture according to claim 124, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle,

square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

138. (Previously presented) The barbed suture according to claim 125, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

139. (Previously presented) The barbed suture according to claim 126, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

140. (Previously presented) The barbed suture according to claim 127, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.